# Hall A "LEDEX" RunPlan
## 1st Low-Energy Beam Period (E$_o$ = 362 MeV): July 24 – Aug. 20, 2006
## E05-103

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• **PROCEDURES FOR EACH HYDROGEN ELASTIC SEQUENCE**
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## 1.0 Ensure Spectrometer Set Properly

o <u>Change HRS-L **momentum & angle**</u> settings to those specified for the HIGHEST MOMENTUM setting (puts peak for central angle @ δ = -2%) in the Kin-Table (follow Counting House "Whiteboard" instructions from J. Lerose for cycling quads when setting momentum).

| p$_h$ (GeV/c) | θ$_h$ (deg) | Target |
|---|---|---|
| Highest Momentum ("δ = -2%") for this H Elastic Sequence | | LH$_2$ |

## 1.1 Spectrometer Pointing Measurements

o Small collimator on HRS-L (will be already bolted in place).
o Check beam position on BPMs (few-tenths of mm on each);
  set Raster ON: ASK MCC for "6 x 4.5" (± ≈ 3 mm in X and Y)
o Set prescales T3=low; other prescales set high (65535) for low deadtime.
o Beam current of up to 20 microamps (up to max DAQ rate of 2-3 kHz)
o Set target to following settings, and take 5 minutes of pointing data at each setting (separate run for each target). (Target C "optics" is not the slanted one)

| p$_h$ (GeV/c) | θ$_h$ (deg) | Target | Time (min) |
|---|---|---|---|
| As set in first step above (1.0) | | C "optics" | 5 |
| | | 4 cm Dummy | 5 |
| | | 15 cm Dummy | 5 |
| | | Tantalum | 5 |

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## 1.2 Hydrogen Elastic Measurement w/ FPP: central elastic peak @ δ = -2%
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o Set prescales T3=low; other prescales set high (65535) for low deadtime.
o Ask MCC for Beam current of up to 20 microamps ; adjust current to give max DAQ rates (2-3 kHz, with "acceptable" deadtime).
o **FPP Carbon Doors**: place **either** the **3" doors** (if momentum above ~660 MeV/c), **1.5" doors** (if central momentum between ~560-660 MeV/c) **or NO doors** (less than ~560 MeV/c) → check FPP Figure of Merit Simulation / runplan document.

| p$_h$ (GeV/c) | θ$_h$ (deg) | Target | Time (hr) |
|---|---|---|---|
| As set in first step above (1.0) | | LH$_2$ | 4 (20M events) |

**1.3 Hydrogen Elastic Measurement: central elastic peak @ δ = 0%**

1.3.1 **w/ FPP:**

Same as previous measurement (**1.2**), except now **LOWER HRS-L momentum setting** to that specified for the MIDDLE (CENTERED) MOMENTUM setting (puts peak for central angle @ δ = 0%) in the Kin-Table (follow Counting House "Whiteboard" instructions from J. Lerose for cycling quads when setting momentum).

| $p_h$ (GeV/c) | $\theta_h$ (deg) | Target | Time (hr) |
|---|---|---|---|
| Middle (centered) Momentum ("δ = 0%") for this H Elastic Sequence | | LH$_2$ | 4 (20M events) |

*1.3.2 Cross Section Measurement: (no FPP)*

o **Insert S0 scintillator layer.**
o **Download appropriate trigger for S0 inserted** (read how to at http://hallaweb.jlab.org/equipment/daq/trigger.html)
o Set PS6 such that you take 2 -3 kHz of trigger and PS3 such that the T3 triggers are 30 % of the T6 triggers.

| $p_h$ (GeV/c) | $\theta_h$ (deg) | Target | Rate/Current | Time (min) |
|---|---|---|---|---|
| As set above in step 1.3.1 | | LH$_2$ | High as possible, keeping Deadtime less than 10% | 20 (2 M events) |
| Same as above | | LH2 | Half the beam intensity of previous measurement (deadtime study) This is temporary | 20 (1 M events) |

o **Remove S0 scintillator layer.**
o **Download standard trigger** (since S0 no longer in place)

**1.4 Elastic Measurement w/ FPP: central elastic peak @ δ = +2%**

o Same as above FPP measurements (**1.2** and **1.3.1**), except now **LOWER HRS-L momentum** setting to that specified for the LOWEST MOMENTUM setting (puts peak for central angle @ δ = +2%) in the Kin-Table (follow Counting House "Whiteboard" instructions from J. Lerose for cycling quads when setting momentum).

| $p_h$ (GeV/c) | $\theta_h$ (deg) | Target | Time (hr) |
|---|---|---|---|
| Lowest Momentum ("δ = +2%") for this H Elastic Sequence | | LH$_2$ | 4 (20M events) |